Section:Obstetrics And Gynaecology

Original Research Article

A STUDY OF PREVALENCE OF ANTITHYROID ANTIBODIES AMONGST OBSTETRICS PATIENTS OF NSCB MEDICAL COLLEGE AND IT'S IMPACT ON MATERNAL AND FETAL OUTCOME

Kumari Snigdha[1], Gita Guin[2], Ranu Jain[3]

[1]Post graduate resident, Department of Obstetrics and Gynaecology, NSCB Medical College, Jabalpur, India
[2]Professor and Dean, Department of Obstetrics and Gynaecology, NSCB Medical College Jabalpur, India
[3]Assistant Professor, Department of Obstetrics and Gynaecology, NSCB Medical College Jabalpur, India

Received : 23/06/2023
Received in revised form : 30/06/2023
Accepted : 04/07/2023

Keywords:
Thyroid disorders, hypothyroidism, Anti TPO antibody, Antithyroid antibodies, pre-eclampsia, pre term labor, premature rupture of membrane, autoimmunity.

Corresponding Author:
Dr. Ranu Jain,
Email: ranu.arinjay@gmail.com

DOI: 10.47009/jamp.2023.5.4.76

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (4); 372-375

Abstract

Background: Thyroid disorders are the second most common endocrinological disorders in pregnancy. Autoimmune thyroid dysfunctions cause both hyperthyroidism and hypothyroidism in pregnant women. The main antibody directed against thyroid antigen is antithyroid peroxidase antibody (anti microsomal antibody). High TPOabs in pregnant women increases the risk of spontaneous abortions, preterm birth, preeclampsia, postpartum thyroiditis, impaired child development etc. The aims & objective is to study prevalence of antithyroid antibodies and it's association with different pregnancy outcomes amongst obstetric patients. **Materials and Methods:** It is a Prospective observational study done from 1st March 2021 to 31st August 2022 at Department of Obstetrics and Gynaecology, N.S.C.B. Medical College and Hospital Jabalpur [MP] by randomly selecting 247 antenatal patients. **Result:** The prevalence of Anti TPO antibody was found to be 11.7% and the mean age was 16-25 years. Anti TPO antibody is 8.23 times associated with high TSH level. History of recurrent abortions was found to be 24.13%, hypothyroidism 17.24%, pre-eclampsia 31.03%, preterm births 10.34% among Anti TPO antibody positive pregnant women. Majority (48.27%) of Anti TPO antibody positive pregnant women were overweight, [BMI 25- 29.9]. 72.41% of Anti TPO positive pregnant women delivered vaginally while 27.61% delivered via cesarean section. Various antepartum complications were associated with Anti TPO positive pregnant women, preterm labor (20.68%), hypertensive disorders of pregnancy (13.79%) and premature rupture of membranes (10.35%). Pre-eclampsia was 6.02 times, preterm labor was 22.72 times higher in Anti TPO positive subjects. There was no significant difference in the prevalence of anemia among Anti TPO positive and Anti TPO negative pregnant women. 58.63% of the neonates of Anti TPO antibody positive pregnant women had low birth weight (1-2.5kg). **Conclusion:** Thyroid disorders are under evaluated in our country due to lack of appropriate screening guidelines and awareness. Early screening and evaluation of the thyroid profile prevent fetal and maternal morbidity.

INTRODUCTION

The pregnancy results in important physiological and hormonal changes that alter thyroid function mainly under the influence of β -HCG and estrogen. Overt hypothyroidism is increased in serum TSH (more than 10 mIU/L) as a result of decreased thyroxine and negative feedback while subclinical hypothyroidism is serum TSH level in the range of 4-10 mIU/L with normal thyroxine (T4) levels. Maternal hypothyroidism in pregnancy is due to autoimmunity, post thyroidectomy or iodine deficiency (Hashimoto thyroiditis is the commonest cause in pregnancy). The incidence of overt hypothyroidism is 0.2-2.5 % and that of subclinical hypothyroidism is 2-7%. Infact thyroid antibodies are present in almost 60% of reproductive age women. Thyroid dysfunction and autoimmunity are relatively common in reproductive age group and have been associated with adverse health outcomes for both mother and child, including hypertensive disorder of pregnancy.[1] Although during reproductive age

ISSN (O): 2687-5365; ISSN (P): 2753-6556

group, and commonly associated with pregnancy, thyroid autoantibodies are found in 5-15% women, they are not necessarily accompanied by thyroid dysfunction.[2,3] Presence of antithyroid antibodies can result in increased risk of miscarriage, gestational diabetes mellitus, postpartum thyroiditis, permanent hypothyroidism, depression and impaired child development.[4-11] Hyperthyroidism however is seen in less than 1 % of pregnant females in India. Hyperthyroidism can be defined as 'Increased thyroid hormone production due to an overactive thyroid gland. The hormones namely T3 and T4 circulate in the body bound to Thyroxine binding globulin (TBG), transthyretin and albumin. The active form is also the unbound version found in very small quantities and is labeled as free T4. Another important hormone is 'Thyroid stimulating hormone' (TSH) which is released from the anterior pituitary and it regulates the production of thyroid hormones.

Aims & Objectives

- To study prevalence of antithyroid antibodies amongst obstetric patients.
- To study association of antithyroid antibodies with different pregnancy outcomes.

MATERIALS AND METHODS

We did a prospective observational study from 1st March 2021 to 31st August 2022 at Department of Obstetrics and Gynaecology, N.S.C.B. Medical College and Hospital Jabalpur [MP] on randomly selected 247 antenatal patients attending Obstetrics OPD or are admitted in obstetrics wards of N.S.C.B. MCH Jabalpur (M.P.).

Inclusion Criteria

Randomly selected antenatal patients who are attending ANC OPD or admitted in obstetrics wards of N.S.C.B. Medical college and have positive Antithyroid antibodies.

Exclusion criteria

- Pregnant subjects with hereditary disease like thyroid dysgenesis, congenital goiter etc.
- Pregnant subjects with tumors like papillary thyroid cancer, anaplastic thyroid cancer etc.
- Pregnant subjects with autoimmune disease (e.g., systemic lupus erythematosus, antiphospholipid antibody syndrome).[7]
- Pregnant subjects with any heart disease, liver disease, renal disease, or chronic hypertension.
- Pregnant subjects on medication that could affect thyroid function.

Statistical Analysis

Data collected was analysed by using statistical software-SPSS version 21. The appropriate statistical methods were used and observations evaluated.

RESULTS

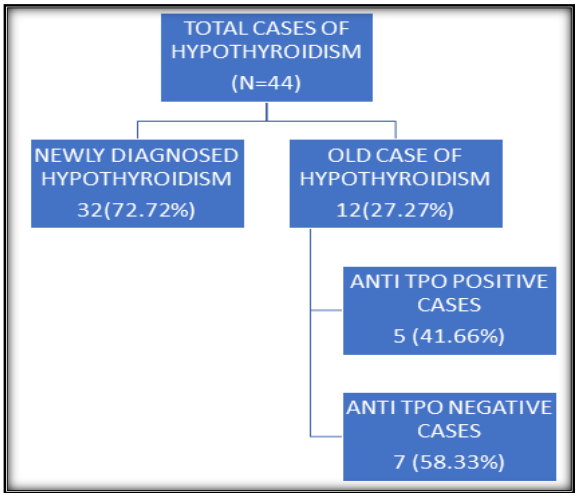

Figure 1: Distribution of hypothyroidism among anti TPO positive and anti TPO negative cases (n=44).

Table 1: Age distribution and BMI among anti TPO positive cases(n=29)

Age	**Percentage of anti TPO positive cases (n=29)**
0-15	0%
16-25	75.86%
26-35	17.24%
36-50	6.89%
BMI	**Percentage (%)**
Under weight (<18.5)	0%
Normal (18.5-24.9)	6.89%
Over weight (25-29.9)	48.27%
Obese (30-34.9)	20.68%
Severe obese (35-39.9)	24.13%
Morbidly obese (>40)	0%

Table 2: Association between anti TPO antibody status and Hypertensive disorder of pregnancy, Preterm pregnancy and Anemia

Pre-eclampsia	**Anti TPO positive(n=29)**	**Anti TPO negative(n=218)**
Present	13.79%	2.29%
Absent	86.21%	97.71%
Pre term pregnancy	**Anti TPO positive(n=29)**	**Anti TPO negative(n=218)**
Present	20.68%	0.91%
Absent	79.32%	99.09%
Anemia	**Anti TPO positive(n=29)**	**Anti TPO negative(n=218)**
Present	37.93%	37.15%
Absent	62.07%	62.85%

ISSN (O): 2687-5365; ISSN (P): 2753-6556

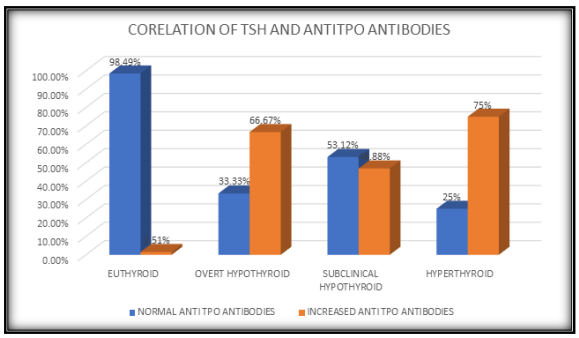

Figure 2: Co relation of TSH with Anti TPO antibodies

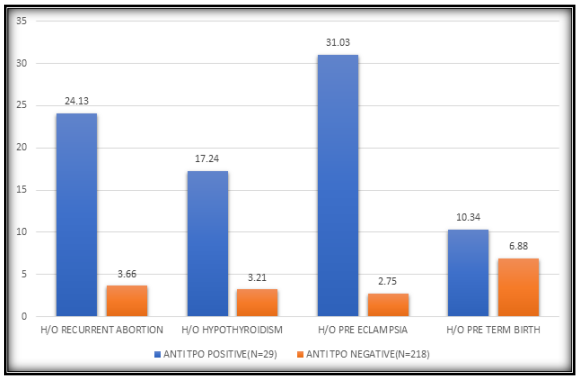

Figure 3: Co relation of positive antithyroid antibody and it's antenatal outcome in previous pregnancy among study population

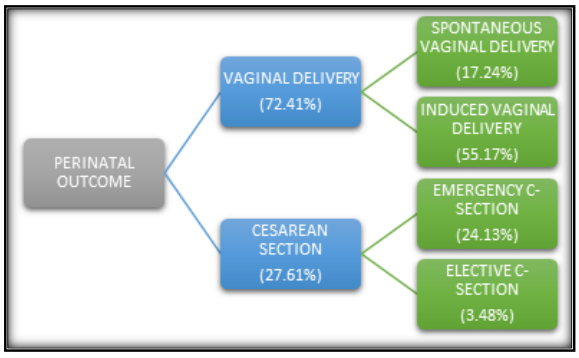

Figure 4: Mode of delivery in Anti TPO positive cases (n=29)

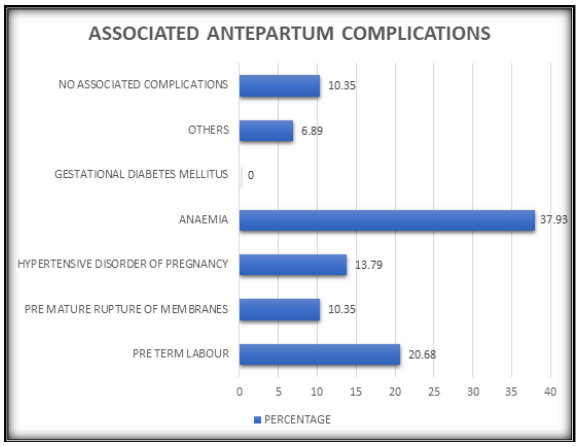

Figure 5: Associated antepartum complications in cases with deranged thyroid profile (n=29)

DISCUSSION

In the present research, we studied the pregnancy outcomes in pregnant women with thyroid dysfunction with or without Anti TPO positivity out of which newly diagnosed cases were 32 (72.72%) and known case of hypothyroidism were 12 (27.27%).

Out of known case of hypothyroidism 5 cases (41.66%) were Anti TPO positive while 7 cases (58.33%) were Anti TPO negative.

Total 247 cases were studied out of which prevalence of Anti TPO antibody was 11.7% (N=29) in our study. Positive Anti TPO antibody is 8.23 times associated with high TSH level than Anti TPO negative antibody.[10] Also association with antenatal high risk factors and raised BMI was also established. This corroborated with findings of other studies like monika meenal et al.,2016, MPA Sailakshmi et al., 2014. 75.86% (N=22) of Anti TPO positive cases are in the age group of 16-25 years. Therefore maximum Anti TPO positive cases belonged to reproductive age group, which was similar to other studies stating higher incidence in reproductive age group. (The Clinical Value and Variation of Antithyroid Antibodies during Pregnancy Chuyu Li, Jing Zhou,et al.,2020).[8]

In earlier pregnancies, those who were Anti TPO positive had history of recurrent abortions in 24.13%(N=22) as against only 3.66% in those who were Anti TPO negative, this association was 6.59 times higher in Anti TPO positive. Similar results were found in Mehran et al.,2013. A Stagnaro et al.,1990.

Limitations of the Study

- The samples derived from the hospital population are also subject to Berksonian bias.
- Our study did not control for other possible causes of pregnancy complications such as parental chromosomal anomalies, immunologic derangements, and uterine pathology.

CONCLUSION

The thyroid disorders are one of the common associated medical complications of pregnancy and leads to many adverse outcomes. However routine screening is not followed particularly in CHC, PHC etc due to lack of awareness and at times limitations in performing the test such as non-availability of human and supportive resources.

Hypothyroidism, hyperthyroidism and subclinical cases are under evaluated in our country due to lack of appropriate screening guidelines and awareness.

Early screening and evaluation of the thyroid profile is mandatory in non-pregnant as well as pregnant women so that complications of infertility, recurrent abortions, IUGR, preterm deliveries may be avoided. Also the likely complications of mental retardation and neonatal demise can be minimised.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Women with biochemically normal thyroid function can have autoimmune thyroid dysfunction which can lead to poor obstetrics outcomes.

In developing country like India where resources are sparse, Anti TPO antibody and TSH, if done as a screening tool can be both cost effective and method of early detection of thyroid dysfunction and cases can be early picked up and treated and maternal and neonatal outcome can be improved.

Thyroid antibodies should be considered a marker of high-risk pregnancy and should be screened at each level of health care centers and should be timely referred to tertiary care center.

A thorough counselling as well as awareness regarding thyroid related diseases to improve compliance to treat and follow up and educating the medical professional, health care workers, ASHA workers is a must.

REFERENCES

1. Emmy van den Boogaard 1, Rosa Vissenberg 2, Jolande A. Land 3, Madelon van Wely 1, Joris A.M. van der Post 4, Mariette Goddijn 1, and Peter H. Bisschop 5,* "Significance of (sub)clinical thyroid dysfunction and thyroid autoimmunity before conception and in early pregnancy: a systematic review" Human Reproduction Update, Vol.17, No.5 pp. 605–619, 2011 Advanced Access publication on May 28, 2011 doi:10.1093/humupd/dmr024
2. M Feki, SOmar, O Menif et al., "Thyroid disorders in pregnancy: Frequency and association with selected diseases and obstetrical complications in Tunisian women" clinical biochemistry, Volume 41, Issue 12, August 2008, Pages 927-931, 2008
3. W.C Allan, J.E Haddow, G.E Palomaki et al.,"Maternal thyroid deficiency and pregnancy complications: implications for population screening", journal of medical Screening, vol7, no.3,pp.127-130,2000.
4. A. Stagnaro-Green, S.H. Roman, RH Cobin, E.El-Harazy, A.Alvarez-Marfany, and T.F.Davies, "Detection of at -risk pregnancy by means of highly sensitive assays for thyroid autoantiboidies," Journal of the American Medical association, vol 264, no. 11 ,pp 1422-1425, 1990
5. T. Bagis,A Gokcel, and E.S Saygili, "Autoimmune thyroid disease in pregnancy and the post partum period: relationship to spontaneous abortion," Thyroid, vol.11 , no. 11, pp. 1049-1053, 2001
6. V.J. Pop, E. De Vries, A.L. Van Baar et al.,"Maternal thyroid peroxidase antibodies during pregnancy; a marker of impaired child development?" Journal of clinical Endocrinology and Metabolism, vol 80, no. 12 , pp 3561- 3566, 1995.
7. Stagnaro – Green A., Roman S. H., Cobin R.H. et al(1990) . Detection of at risk pregnancy by means of highly sensitive assays for thyroid antibodies. J.Am. Med. Assoc. 264: 1422-1425
8. The Clinical Value and Variation of Antithyroid Antibodies during Pregnancy Chuyu Li # 1 2 3, Jing Zhou # 1 2 3, Zengshu Huang 1 2 3, Xinyao Pan 1 2 3, Wingting Leung 1 2 3, Lijia Chen 1 2 3, Yanzhi Zhang 1 2 3, Lan Wang 1 2 3, Yizhen Sima 1 2 3, Hans-Jürgen Gober 4, Na Zhang 1 2 3, Xuemin Qiu 1 2 3, Lisha Li 1 2 3, Liang Guan 5 6, Ling Wang 1 2 3., 2020
9. Ramprasad M, Bhattacharyya SS, Bhattacharyya A. Thyroid disorders in pregnancy. Indian J Endocrinol Metab. 2012 Dec;16(Suppl 2):S167-70. doi: 10.4103/2230-8210.104031. PMID: 23565370; PMCID: PMC3603018.
10. Korevaar, T., Medici, M., Visser, T. et al. Thyroid disease in pregnancy: new insights in diagnosis and clinical management. Nat Rev Endocrinol 13, 610–622 (2017). https://doi.org/10.1038/nrendo.2017.93
11. Gupta P, Jain M, Verma V, et al. (July 18, 2021) The Study of Prevalence and Pattern of Thyroid Disorder in Pregnant Women: A Prospective Study. Cureus 13(7): e16457. doi:10.7759/cureus.16457

ISSN (O): 2687-5365; ISSN (P): 2753-6556